2022

B.A./B.Sc.

Fourth Semester

CORE – 10

COMPUTER SCIENCE

Course Code: CSC 4.31

(Database Management Systems)

Total Mark: 70 *Pass Mark: 28*

Time: 3 hours

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. (a) What is DBMS? List down the advantages and disadvantages of DBMS. 2+4=6
   (b) Explain the role of database administrator. 4
   (c) Explain data independence in detail. 4

2. (a) Define file. Explain in detail about the architecture of DBMS. 2+5=7
   (b) What are the advantages of DBMS over traditional file system? 4
   (c) What are the different types of database users? 3

UNIT–II

3. (a) What are constraints? Elaborate the types of constraints in DBMS. 2+5=7
   (b) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. 7

   Hospital tables:
   patients (patient-id, name, insurance, date-admitted, date-checked-out)
   doctors (doctor-id, name, specialization)
   test (testid, testname, date, time, result)
   doctor-patient (patient-id, doctor-id)
   test-log (testid, patient-id) performed-by (testid, doctor-id)

4. (a) Define the following: 1×7=7

(i) Table (ii) Fields

(iii) SQL (iv) Record

(v) Queries (vi) Meta data

(vii) Difference between drop table and delete table

(b) Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. 7

Car insurance tables:

person (driver-id, name, address)

car (license, year, model)

accident (report-number, date, location)

participated (driver-id, license, report-number, damage-amount)

UNIT–III

5. (a) Define primary key. Explain the three types of database language with appropriate example. 2+6=8

(b) Define ER diagram. Explain in detail the different symbols involved in ER diagram. 2+4=6

6. (a) Explain relational model concepts in DBMS. 3

(b) Explain the functions of a database. 3

(c) Differentiate between logical data independence and physical data independence. 6

(d) Define foreign key. 2

UNIT–IV

7. Explain normalization. Explain 1NF, 2NF, 3NF in detail. 5+9=14

8. (a) Define a relationship set in DBMS. Explain all possible cardinality ratios for binary relationships with examples and diagrams. 2+8=10

(b) Explain BCNF in detail. 4

UNIT–V

9. (a) Explain file organization in detail. 7
   (b) Define B+ tree and explain the structure of B+ tree. 2+5=7

10. (a) Define primary, secondary, clustering index with appropriate example. 3+3+3=9
    (b) Explain file operation in detail. 5
